

WHAT IS CLAIMED IS:

1. A mobile communications network comprising:

one or more routing nodes for receiving data to which  
5 the IP address of a mobile station is added, and for  
carrying out routing of the data in accordance with routing  
information; and

one or more edge nodes for receiving the data routed  
by said routing nodes, and for transmitting the data to  
10 the mobile station corresponding to the IP address of the  
mobile station added to the data.

2. The mobile communications network as claimed in claim  
1, further comprising:

15 a location information server for managing  
information about correspondence between the IP address  
of the mobile station and the IP address of the edge node  
that supervises the area visited by the mobile station,  
wherein

20 said routing nodes include a gate node;

said gate node retrieves, by accessing said location  
information server, the IP address of the edge node  
supervising the area visited by the mobile station  
corresponding to the IP address of the mobile station added  
25 to the received data, and adds the IP address of the edge  
node to the received data;

said routing information includes information about

correspondence between the IP address of the edge node and the transmission route; and

said routing nodes carry out the routing of the received data in accordance with the IP address of the edge node added to the received data and the routing information.

3. The mobile communications network as claimed in claim 2, wherein the IP address of a group of mobile stations can be added as the IP address of the mobile station to be added to the data, wherein

said location information server manages information about correspondence between the IP addresses of the mobile stations belonging to the group and the IP address of the group of the mobile stations;

said gate node retrieves, when the IP address of the group of the mobile stations is added to the received data, the IP addresses of the edge nodes supervising the areas visited by the mobile stations corresponding to the IP address of the group of the mobile stations by accessing said location information server, replicates the received data by the number of the edge nodes, adds to each of the data the IP address of each of the edge nodes and the IP addresses of the mobile stations visiting the supervisory area of the edge node, and carries out the routing of the data.

4. The mobile communications network as claimed in claim 2 or 3, wherein when said mobile station moves from the supervisory area of an old edge node to the supervisory area of a new edge node, said moving mobile station notifies  
5 said location information server of its own IP address and the IP address of the new edge node; and said location information server updates information about correspondence between the IP address of the moving mobile station and the IP address of the edge node supervising  
10 the area visited by the moving mobile station.

5. The mobile communications network as claimed in claim 2 or 3, wherein when said mobile station moves from the supervisory area of an old edge node to the supervisory  
15 area of a new edge node, said moving mobile station transmits its own IP address and the IP address of the new edge node to the old edge node; and when said old edge node thereafter receives data to which the IP address of the moving mobile station is added, said old edge node  
20 transmits the data to said new edge node with adding the IP address of the new edge node to the data.

6. The mobile communications network as claimed in claim 1, wherein  
25 said routing information includes information about correspondence between the IP address of the mobile station and the transmission route, and wherein

said routing nodes carry out the routing of the received data in accordance with the IP address of the mobile station added to the received data and the routing information.

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7. The mobile communications network as claimed in claim 6, wherein the IP address of a group of mobile stations can be added as the IP address of the mobile station to be added to the data, and wherein

10 said routing nodes have group information which is information about correspondence between the IP addresses of the mobile stations belonging to the group and the IP address of the group of the mobile stations, replicate, when the IP address of the group of the mobile stations  
15 is added to the received data, the received data by the number of the transmission routes corresponding to the IP addresses of the mobile stations corresponding to the added IP address of the group of the mobile stations in accordance with the group information and the routing information and  
20 carry out the routing of the data.

8. The mobile communications network as claimed in claim 6 or 7, wherein the IP address of the mobile station to be added to the data can include the IP addresses of a  
25 plurality of mobile stations, wherein

said routing nodes replicate, when the IP addresses of the plurality of the mobile stations are added to the

received data, the received data by the number of the transmission routes corresponding to the IP addresses of the plurality of the mobile stations in accordance with the routing information, add to each of the data, the IP  
5 addresses of the mobile stations corresponding to each of the transmission routes, and carry out the routing of the data.

9. The mobile communications network as claimed in any  
10 one of claims 6-8, wherein said mobile station, when it moves from the supervisory area of an old edge node to the supervisory area of a new edge node, transmits its own IP address to said new edge node, and wherein each node from the higher level routing node of said new edge node up to  
15 the junction routing node from which the transmission routes diverge to said old edge node and to said new edge node, updates its own routing information about the moving mobile station.

20 10. The mobile communications network as claimed in any one of claims 6-8, wherein said routing information includes information about correspondence between the IP address of the edge node and the transmission route, and wherein

25 said routing nodes carry out the routing of the received data in accordance with the IP address of the edge node added to the received data and the routing

information; and

said mobile station notifies, when it moves from the supervisory area of an old edge node to the supervisory area of a new edge node, said old edge node of its own IP address and the IP address of the new edge node, and said  
5 old edge node transmits, when it thereafter receives data to which the IP address of the moving mobile station is added, the data to said new edge node with adding the IP address of the new edge node to the data.

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11. The mobile communications network as claimed in any one of claims 1-10, further comprising a data delivery server for delivering data, wherein said data delivery server delivers data to said mobile station in response  
15 to a request from said mobile station.

12. The mobile communications network as claimed in claim 1, further comprising:

a location information server for managing  
20 information about correspondence between the IP address of the mobile station and the IP address of the edge node that supervises the area visited by the mobile station, wherein

each of said edge nodes receives data which is  
25 transmitted by a mobile station visiting its own supervisory area and to which the IP address of the mobile station is added, retrieves by accessing said location

information server the IP address of the edge node supervising the area visited by the mobile station corresponding to the IP address of the mobile station added to the received data, adds the IP address of the edge node to the received data, and transmits the data to said routing node;

said routing information includes information about correspondence between the IP address of the edge node and the transmission route; and

10        said routing nodes carry out the routing of the received data in accordance with the IP address of the edge node added to the received data and the routing information.

15        13. The mobile communications network as claimed in claim 12, wherein said edge node generates and manages information about correspondence between the IP address of the mobile station added to the received data and the IP address of the edge node supervising the area visited by the mobile station.

25        14. The mobile communications network as claimed in claim 13, wherein when said mobile station moves from the supervisory area of an old edge node to the supervisory area of a new edge node during communication with another mobile station, said moving mobile station transmits its own IP address and the IP address of the new edge node to

the edge node supervising the area visited by the party mobile station; and said edge node updates information about correspondence between the IP address of the moving mobile station and the IP address of the edge node  
5 supervising the area visited by the moving mobile station.

15. The mobile communications network as claimed in claim 13, wherein when said mobile station moves from the supervisory area of an old edge node to the supervisory  
10 area of a new edge node, said moving mobile station transmits its own IP address and the IP address of the new edge node to the old edge node; and when said old edge node thereafter receives data to which the IP address of the moving mobile station is added, said old edge node  
15 transmits the data to said new edge node with adding the IP address of the new edge node to the data.

16. The mobile communications network as claimed in claim 12, wherein when said mobile station moves from the  
20 supervisory area of an old edge node to the supervisory area of a new edge node, said moving mobile station notifies said location information server of its own IP address and the IP address of the new edge node; and said location information server updates information about  
25 correspondence between the IP address of the moving mobile station and the IP address of the edge node supervising the area visited by the moving mobile station.



17. The mobile communications network as claimed in claim 1, wherein

each of said edge nodes receives data which is  
5 transmitted by a mobile station visiting its own  
supervisory area and to which the IP address of the mobile  
station is added, and transmits the data to said routing  
node;

said routing information includes information about  
10 correspondence between the IP address of the mobile station  
and the transmission route; and

said routing nodes carry out the routing of the  
received data in accordance with the IP address of the  
mobile station added to the received data and the routing  
15 information.

18. The mobile communications network as claimed in claim  
17, wherein said mobile station, when it moves from the  
supervisory area of an old edge node to the supervisory  
20 area of a new edge node, transmits its own IP address to  
said new edge node, and wherein each node from the higher  
level routing node of said new edge node up to the junction  
routing node from which the transmission routes diverge  
to said old edge node and to said new edge node, and from  
25 the junction routing node to the higher routing node of  
said old edge node, updates its own routing information  
about the moving mobile station.

19. The mobile communications network as claimed in claim 17, wherein said routing information includes information about correspondence between the IP address of the edge  
5 node and the transmission route, and wherein

said routing nodes carry out the routing of the received data in accordance with the IP address of the edge node added to the received data and the routing information; and

10 said mobile station notifies, when it moves from the supervisory area of an old edge node to the supervisory area of a new edge node, said old edge node of its own IP address and the IP address of the new edge node, and said old edge node transmits, when it thereafter receives data  
15 to which the IP address of the moving mobile station is added, the data to said new edge node with adding the IP address of the new edge node to the data.

20. A data delivery method in a mobile communications  
20 network including one or more routing nodes and one or more edge nodes, said data delivery method comprising the steps of:

receiving, at one of said routing nodes, data to which the IP address of a mobile station is added, and carrying  
25 out routing of the data in accordance with routing information; and

receiving, at one of said edge nodes, the data routed

by said routing nodes, and transmitting the data to the mobile station corresponding to the IP address of the mobile station added to the data.

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